

Work Order ID 138490

Wednesday, October 28, 2015 12:57:53 PM

138490

Page 1

Item ID: D206-667-147TRN

Accept

N900040100

Setup Start ***NS1***

Revision ID:

Stop ***NS2***

Item Name: Crosstube Assembly, Mid Fwd

Start Date: 10/28/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 10/28/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: MCS Date: OCT 28 2015

Tooling:

Date:

Run Start ***NR1***

QC: _____ Date: _____ SPC (Y/N): _____

Date:

Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	Revision Nbr								
D206-667-147	A								

100

0.00

100

MORI SEIKI CNC LATHE LARGE

Mori Seiki

Memo

0.02

Mori Seiki CNC Lathe Large

1-Fill tube with sand & install plugs DTxxxx on both ends as per Folio FB029

2-Turn first side as per Folio FB029

3-File down transition lines smooth.

FOLIO REV: AA

DWG REV: A

1 Ø
mmml
16/02/16

110

~~QC~~ Inspection performed by CMM

0.00

110

QC

Memo

0.00

Quality Control

QC2
5/6/01/13

1 Ø
mmml
16/02/17

Work Order ID 138490

Wednesday, October 28, 2015 12:57:53 PM

138490

Page 2

Item ID: D206-667-147TRN

Accept

N900040100Setup Start ***NS1***

Revision ID:

Item Name: Crosstube Assembly, Mid Fwd

Stop ***NS2***Start Date: 10/28/2015 Start Qty: 1.00 ***1***

Cust Item ID:

Required Date: 10/28/2015 Req'd Qty: 1.00 ***1***

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
120	MORI SEIKI CNC LATHE LARGE	0.00							
120 Mori Seiki	Memo 1-Turn second side as per Folio FB029 2-File down transition lines smooth. 3-Remove sand and plugs FOLIO REV: <u>AA</u> DWG REV: <u>A</u>	0.00							
Mori Seiki CNC Lathe Large									
130	QC1- Inspection performed by CMM	0.00							
130 QC	Memo QC2 Sicel/15	0.00							
Quality Control									
140	QC8- Inspect parts - second check	0.00							
140 QC	Memo	0.00							
Quality Control									

mmml
16/02/17mmml
16/02/17DAS
47
9-89

16-02-17

Wednesday, October 28, 2015 12:57:53 PM

138490

Page 3

Accept

N900040100

Setup Start *NS1*

Stop *NS2*

Start Date: 10/28/2015 **Start Qty:** 1.00 ***1***

Cust Item ID:

Required Date: 10/28/2015 **Req'd Qty:** 1.00 ***1***

Customer:

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____
QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Run	Start	*NR1*
	Stop	*NR2*

[illegible]

Work Order ID 138490

Wednesday, October 28, 2015 12:57:53 PM

138490

Page 4

Item ID: D206-667-147TRN

Accept

N900040100Setup Start ***NS1***

Revision ID:

Item Name: Crosstube Assembly, Mid Fwd

Stop ***NS2***

Start Date: 10/28/2015 Start Qty: 1.00

1

Cust Item ID:

Required Date: 10/28/2015 Req'd Qty: 1.00

1

Customer:

Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Run Start ***NR1***Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170	Packaging	0.00							
170									
Packaging	Memo	0.00				BL		16/02/023	
Packaging	LOCATION : LG014								
180	QC21- Final Inspection - Work Order Release	0.00							
180									
QC	Memo	0.00							
Quality Control									

16/2/24 

MCS FEB 23 2016

Picklist Print

Wednesday, October 28, 2015 12:57:57 PM

Page 1

Work Order ID: 138490

138490

Parent Item: D206-667-147TRN

D206-667-147TRN

Parent Item Name: Crosstube Assembly, Mid Fwd

Start Date: 10/28/2015

Required Date: 10/28/2015

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP rev:A 11.01.06 new issue DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D6002-115		Manufactured	No			100	Each	78.0000	1	1			

D6002-115

Crosstube Material

Location

Loc Qty

Loc Code

HALL

60

107867

60

LG003

18

69794

15

75629

3

1 *amm L* 10/02/16

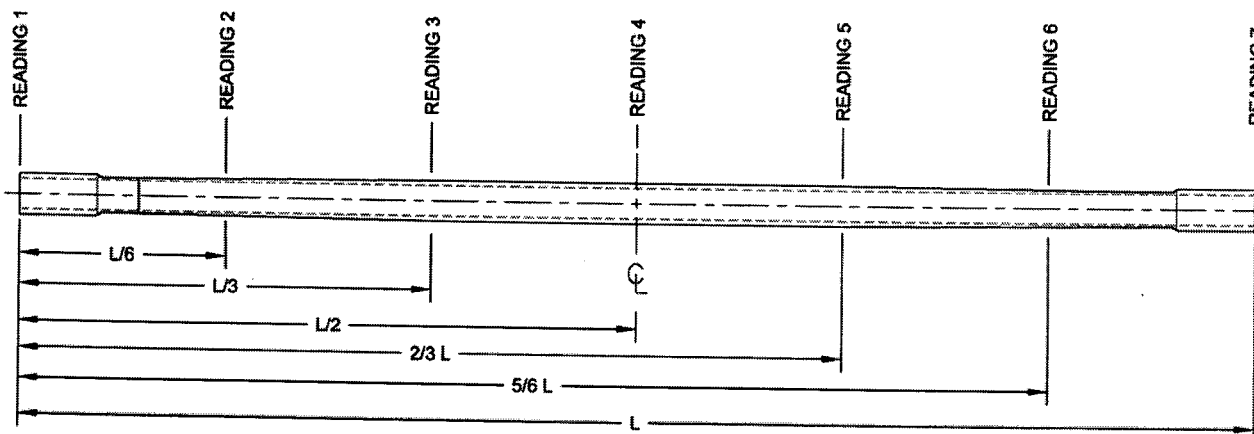
DART AEROSPACE LTD		Work Order:	138990
Description: Crosstube Assembly, Mid Fwd		Part Number:	D206-667-147
Inspection Dwg: D206-667-147 Rev: A		Page 1 of 2	

FIRST ARTICLE INSPECTION CHECKLIST

Inspection Sheet Drawing Dimension		Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
SIDE A	2.240	+0.005/-0.000	2.242	-		VERN	CNC-08
	1.984	+0.005/-0.000	1.986	-			
	2.019	+0.005/-0.000	2.022	-			
	2.058	+0.005/-0.000	2.062	-			
	2.097	+0.005/-0.000	2.101	-			
	2.136	+0.005/-0.000	2.137	-			
	2.176	+0.005/-0.000	2.178	-			
	0.125	+/-0.010	.125	-		VERN	CNC-08
	R0.063	+/-0.010	.063	-		RG	
	R2.00	+/-0.010	2.00	-		"	
	R0.063	+/-0.010	.063	-		"	
	4.438	+/-0.030	4.440	-		VERN	CNC-08
SIDE B	2.240	+0.005/-0.000	2.240	-		VERN	CNC-08
	1.984	+0.005/-0.000	1.986	-			
	2.019	+0.005/-0.000	2.022	-			
	2.058	+0.005/-0.000	2.062	-			
	2.097	+0.005/-0.000	2.101	-			
	2.136	+0.005/-0.000	2.137	-			
	2.176	+0.005/-0.000	2.177	-			
	0.125	+/-0.010	.125	-		VERN	CNC-08
	R0.063	+/-0.010	.063	-		RG	
	R2.00	+/-0.010	2.00	-		"	
	R0.063	+/-0.010	.063	-		"	
	4.438	+/-0.030	4.440	-		VERN	CNC-08
	99.84	+/-0.020	99.84	-		tape	

DART AEROSPACE LTD		Work Order:	<u>138490</u>
Description: Crosstube Assembly, Mid Fwd		Part Number:	D206-667-147
Inspection Dwg: D206-667-147 Rev: A		Page 2 of 2	

WALL THICKNESS MEASUREMENT



Location	WALL THICKNESS MEASUREMENT (IN)				Deviation Δw (max-min)	TOLERANCE
	w1	w2	w3	w4		
READING 1 L= 0"	.248	.251	.264	.257	.016	0.035"
READING 2 L= 17	.189	.171	.185	.174	.014	
READING 3 L= 33	.242	.247	.249	.247	.007	
READING 4 L= 50	.251	.257	.264	.261	.013	
READING 5 L= 67	.241	.248	.249	.246	.008	
READING 6 L= 83	.167	.171	.178	.175	.011	
READING 7 L= 99	.251	.256	.253	.253	.005	

Calibration Result

Actual Block Thickness: .260 - .260

Sitescan 250 Measured Thickness: .260 - .250

Measured by:	<u>mmr L</u>
Date:	<u>16/02/17</u>

Audited by:	<u>DAS 47</u>
Date:	<u>16-02-17</u>

Preliminary Approval:	
Date:	

Rev	Date	Change	Revised by	Approved
B	11.06.21	New Issue	KJ	
C	12.06.04	Wall thickness form added	KJ	

Item	Qty	Part Number	Description
	-147		
1	X	D206-667-147	CROSSTUBE ASSEMBLY (206L MID FWD)
2	1	D6002-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299- 947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6002-115
FINISHED LENGTH = 99.84±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-147" AND BATCH NUMBER ON
INSIDE OF CUFF PER DART QSI 044 6.4 (VIBRATING STYLUS).
- 7) WEIGHT: 15.0 lbs (-507 ± 12.84)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY,
TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE
TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI
015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE
THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS
ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE
OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS
SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT
LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN
SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT

WORK NOTICE
WORK ORDER

NO 138490 MLJ
1570-28

DEO ATTACHED

EW #11-615
11.07.28

UNDER REVIEW

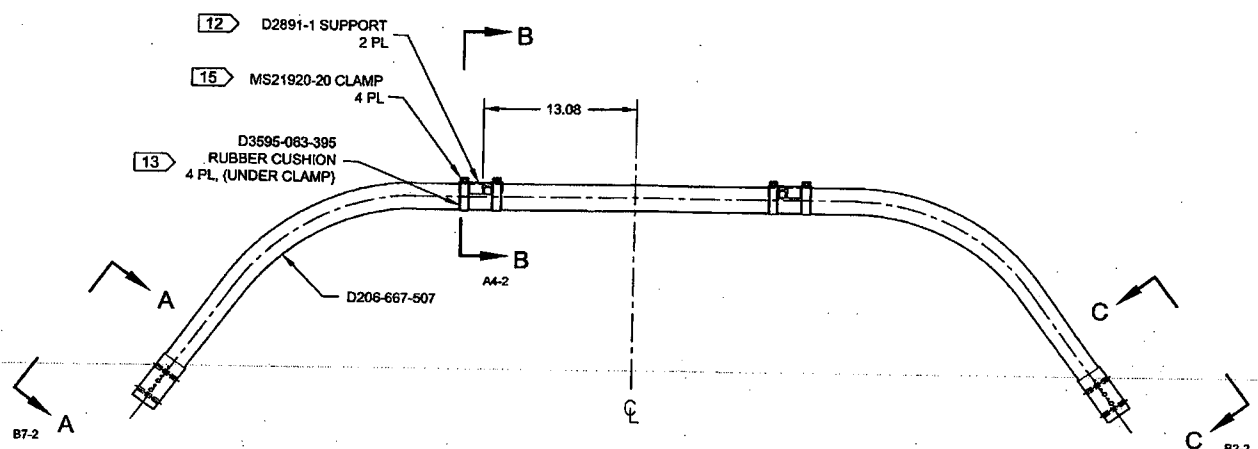
RELEASED
2011-05-26
MM

A	NEW ISSUE	CP	10.11.23
REV.	DESCRIPTION	BY	DATE
DESIGN			
DRAWN			
CHECKED			
MFG. APPR.			
APPROVED			
DE APPR.			
DATE	10.12.23		

DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWING NO. D206-667-147	REV. A
TITLE CROSSTUBE ASS'Y (206L MID FWD)	SHEET 1 OF 4
SCALE NTS	

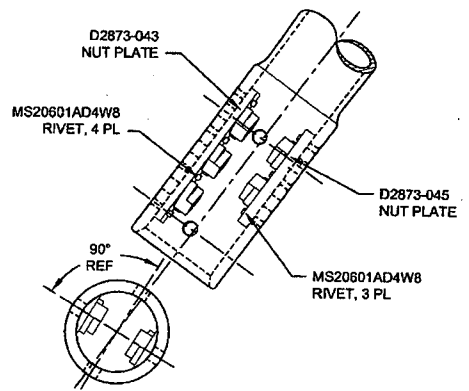
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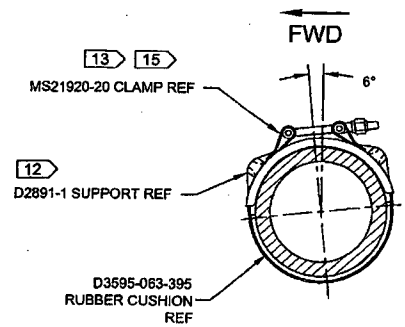


D206-667-147
ASSEMBLY DETAIL
(VIEW LOOKING FWD)

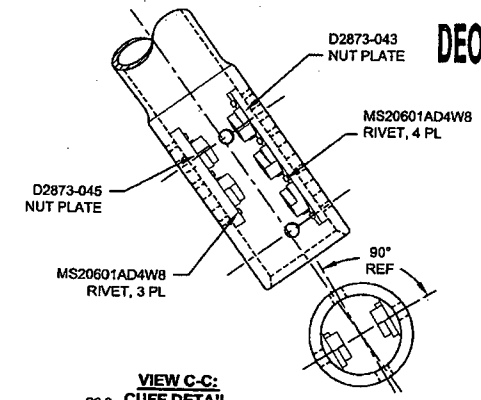
ECW #1.615
11.07.28
UNDER REVIEW
RELEASED
2011-05-24
DEO ATTACHED



VIEW A-A:
CUFF DETAIL
SCALE 4X



SECTION B-B
SCALE 6X



VIEW C-C:
CUFF DETAIL
SCALE 4X

DESIGN		DART AEROSPACE LTD	
DRAWN	99	HAWKESBURY, ONTARIO, CANADA	
CHECKED		DRAWING NO.	REV. A
MFG. APPR.		D206-667-147	SHEET 2 OF 4
APPROVED		TITLE	SCALE
DE APPR.		CROSSTUBE ASS'Y (206L MID FWD)	NTS
DATE	10.12.23	COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS UNCLASSIFIED AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

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8

7

6

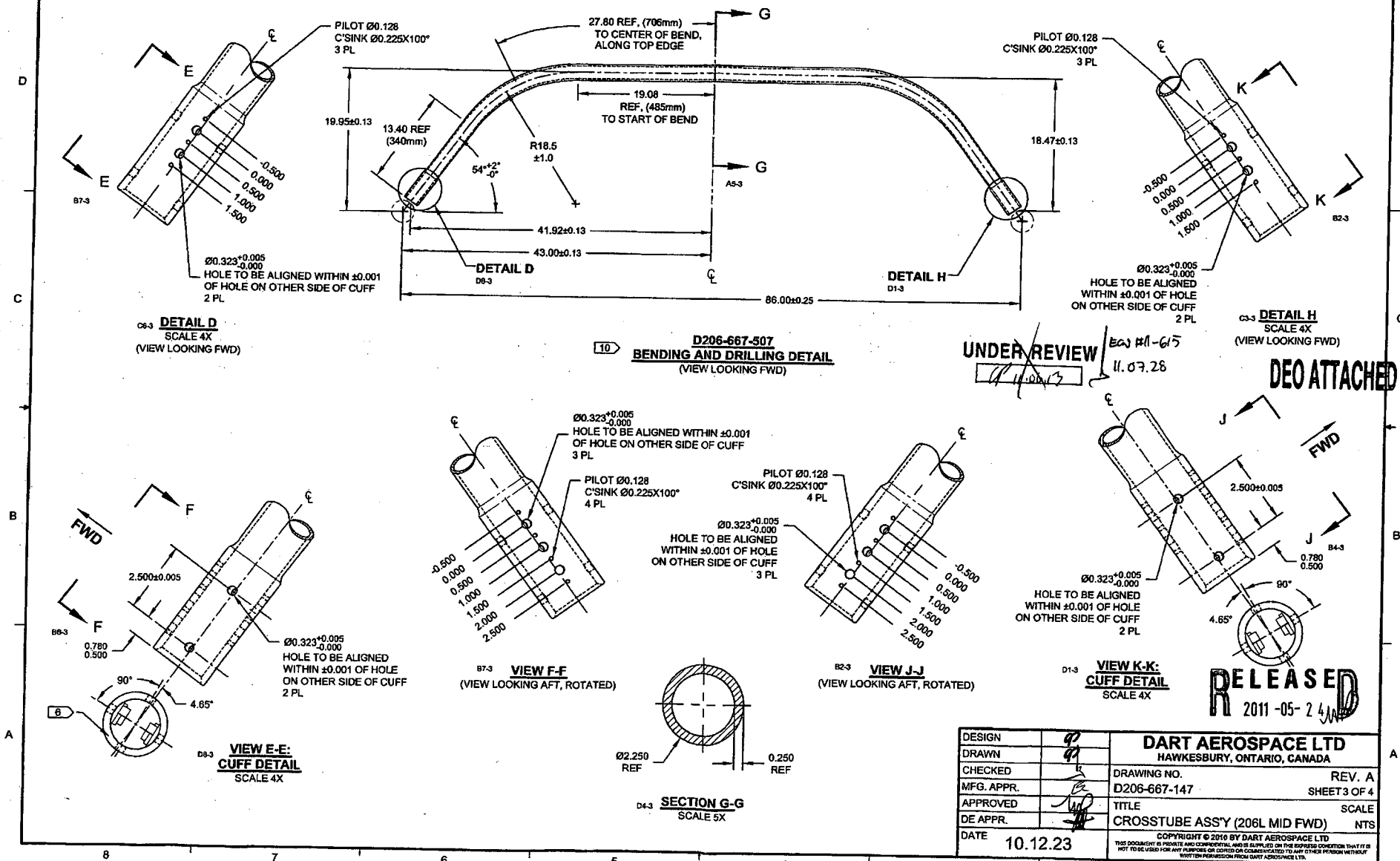
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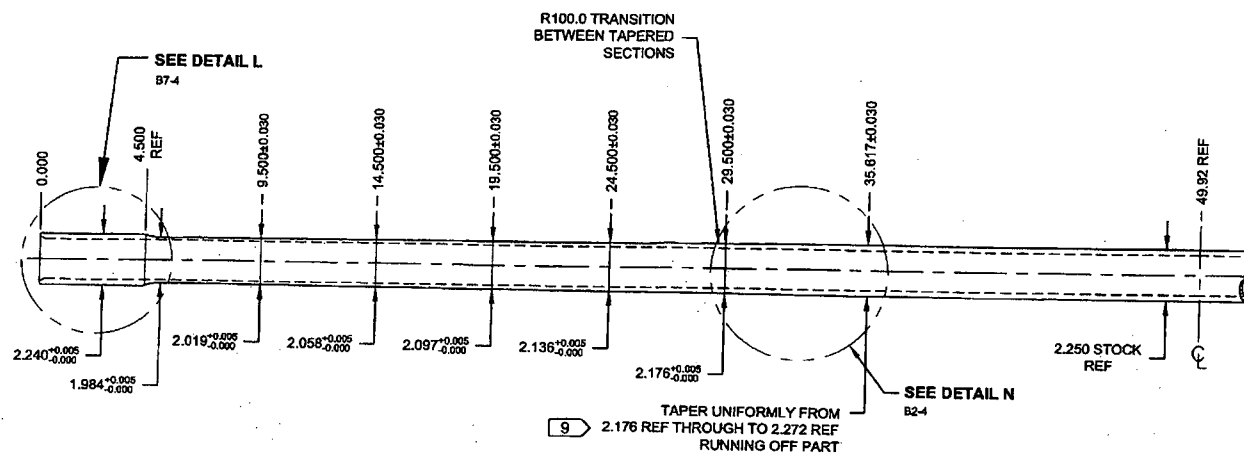
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2

1

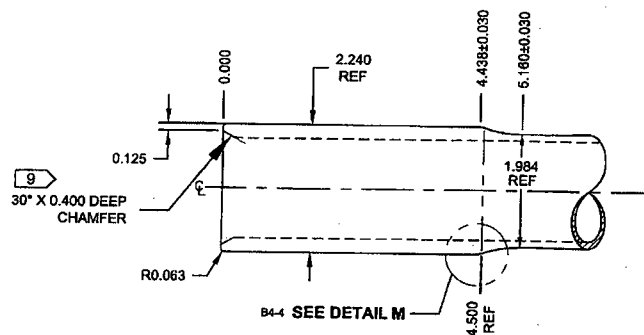


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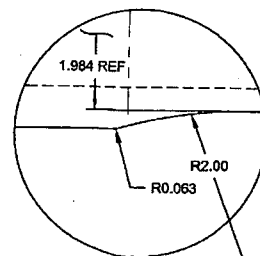


UNDER REVIEW
11.06.19
ECN # 11-615
11.07.20

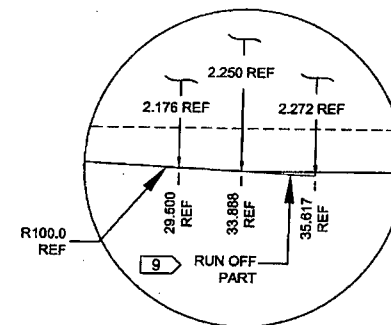
TURNING DETAIL



**DETAIL L:
CROSSTUBE CUFF**
D7-4 NOT TO SCALE



**DETAIL M:
CUFF TRANSITION**
A6-4 NOT TO SCALE



**DETAIL N:
TAPER RUN-OFF**
C4-4 NOT TO SCALE

DEO ATTACHED

RELEASED
2011-05-23

DESIGN		DART AEROSPACE LTD	
DRAWN	<i>92</i>	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>92</i>	DRAWING NO.	REV. A
MFG. APPR.		D206-667-147	SHEET 4 OF 4
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.		CROSSTUBE ASS'Y (206L MID FWD)	NTS
DATE	10.12.23	COPYRIGHT © 2010 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

8 7 6 5 4 3 2 1

DRAWING NO. D206-667-147	TITLE CROSSTUBE ASS'Y (206L MID FWD)	REV. A	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D206-667-147-A-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>Q</i>	CHECKED <i>AJS</i>	MFG. APPR. <i>JB</i>	APPROVED <i>MD</i>	DE APPR. <i>MD</i>			
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21	DATE 11.07.21			

PURPOSE:

REPLACE MAGNOBOND WITH PROSEAL.

CHANGE:

IS:

Item	Qty -147	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
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NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2891-1 SUPPORT: ABRABE MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED
2011-07-28
MD

DRAWING NO. D206-667-147	TITLE CROSSTUBE ASS'Y (206L MID FWD)	REV. A	DART AEROSPACE LTD ENGINEERING ORDER		D.E.O. NO. D206-667-147-A-2	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN AJS	CHECKED	MFG. APPR.	APPROVED		DE APPR.		
DATE 12.08.02	DATE 12.08.02	DATE 12.08.02	DATE 12.08.02		DATE 12.08.02	DATE 12.08.02	

PURPOSE:

ADD ELECTRICAL GROUNDING STRAP

CHANGE:

PARTS LIST:

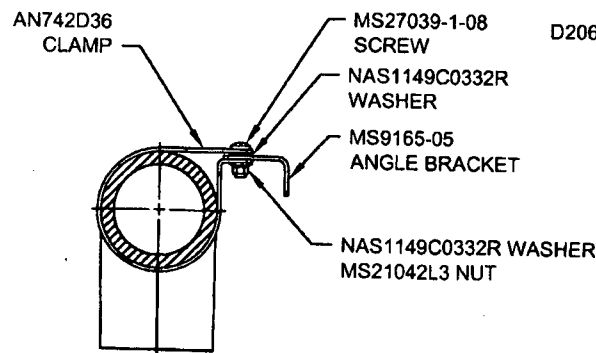
ITEM	QTY -147	PART NUMBER	DESCRIPTION
1	X	D206-667-147	CROSSTUBE ASSEMBLY (206L MID FWD)
10	2	AN742D36	CLAMP
11	2	MS9165-05	ANGLE BRACKET
12	2	MS21042L3	NUT (OR MS21042-3)
13	2	MS27039-1-08	SCREW
14	4	NAS1149C0332R	WASHER (OR AN960C10L)

GENERAL NOTES:

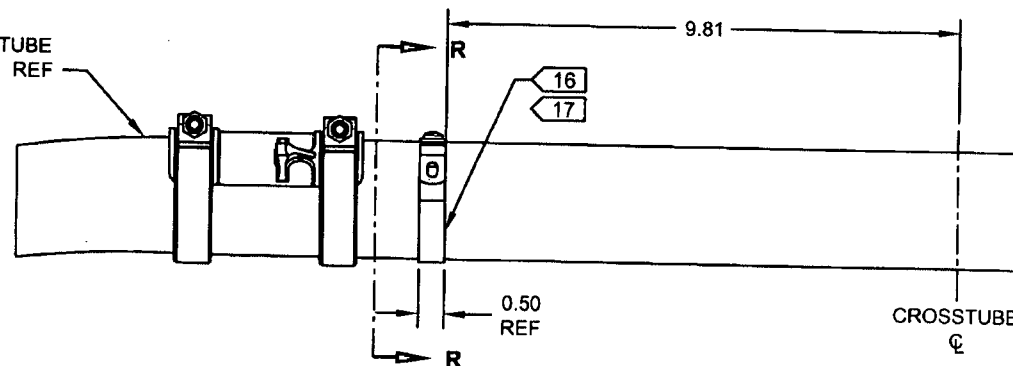
- 16) MASK AREA UNDER CLAMP PRIOR TO PAINTING
- 17) SEAL EDGES WHERE AN742D36 CLAMP MEETS WITH THE CROSSTUBE USING SIKAFLEX-241/-291 OR MIL-S-8802 CLASS B2 OR PROSEAL 890 SEALANT
- 18) PERFORM RESISTANCE CHECK TO ENSURE MAX RESISTANCE IS 10 MILLIOHMS

→ AFT

RELEASED
12.08.17
ECN 12-431



SECTION R-R



DETAIL P
BONDING STRAP INSTALLATION 2 PL